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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,380	09/10/2003	Woo-Jong Lee	277/ 021	3327

7590 04/18/2005

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EXAMINER	
SCHINDLER, DAVID M	

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/658,380	LEE ET AL.	
	Examiner	Art Unit	
	David Schindler	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9,13 and 14* is/are rejected.

7)☒ Claim(s) *10-12, and 15-16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the communication received on 1/24/2005.

Claim Objections

2. Claims 10, and 14-15 are objected to because of the following informalities:

As to Claim 10,

The language of Claim 10 is awkward as it is unclear if the "output signal" on line 3 is the output of the AND gate or of some other component.

As to Claim 14,

The phrase "exciting a magnetic substance core with current" on line 2 is awkward and it is recommended to change this to "exciting a magnetic substance core with a current."

The phrase "a fluxgate with a pulse generator" on lines 3-4 is unclear. It is not clear if the phrase "a fluxgate" on line 3 is a second fluxgate or if the structure of Claim 14 is the fluxgate. Please see Claim 9.

As to Claim 15,

The phrase "comprising logical AND-ing in an AND gate in the sensing apparatus the pulse" on lines 1-2 is awkward and it is recommended to change this phrase to "comprising an AND gate for logical AND-ing the pulse."

The language of Claim 15 is awkward as it is unclear if the "output signal" on line 3 is the output of the AND gate or of some other component.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Renger (5,764,052).

Renger discloses a pulse controller (32) for generating a pulse to block current from flowing into a driving coil (40) of the fluxgate (Column 7, Lines 22-26) when it is determined that conversion of an analog signal from the fluxgate to a digital signal is completed by an A/D converter (48) and the A/D converter outputs the digital signal to the pulse controller ((Figures 1 and 4) and (Column 7, Lines 12-15) and (Column 7, Lines 22-26)).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 9 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Renger (5,764,052).

As to Claim 9,

AAPA discloses a fluxgate (Figure 1) including a driving coil (40) for exciting a

magnetic substance core with a current (Page 1, Paragraph [0003], Lines 2-3), first (30) and second (31) current amplifiers for applying the current to first and second ends of the driving coil (Page 1, Paragraph [0003], Lines 4-5), and a pulse generator (10) for generating a pulse to turn on/off the first and second current amplifiers (Page 2, Paragraph [0004], Lines 1-2).

AAPA does not disclose a pulse controller for outputting a control signal allowing the pulse to be applied to the first and second current amplifiers, the pulse controller outputting the control signal at a start of a sensing cycle, the fluxgate generating an analog signal due to the excited magnetic substance, and an A/D converter for converting the analog signal from the fluxgate into a digital signal, wherein the pulse controller stops outputting the control signal when the A/D converter outputs the digital signal to the pulse controller.

Renger discloses a pulse controller (32) for outputting a control signal allowing a pulse generator (38) to apply a signal to a coil, the pulse controller outputting the control signal at a start of a sensing cycle (Column 6, Lines 7-11), the fluxgate generating an analog signal (Vout) due to the excited magnetic substance ((Column 3, Lines 56-57) and (Column 6, Lines 53-63), and an A/D converter (48) for converting the analog signal from the fluxgate into a digital signal (Figure 1), wherein the pulse controller stops outputting the control signal when the A/D converter outputs the digital signal to the pulse controller (Column 7, Lines 22-26).

It would have been obvious at the time of the invention to modify AAPA to include a pulse controller for outputting a control signal allowing the pulse to be applied to the

first and second current amplifiers, the pulse controller outputting the control signal at a start of a sensing cycle, the fluxgate generating an analog signal due to the excited magnetic substance, and an A/D converter for converting the analog signal from the fluxgate into a digital signal, wherein the pulse controller stops outputting the control signal when the A/D converter outputs the digital signal to the pulse controller as taught by Renger in order to measure an external magnetic field (Column 1, Line 62-63).

As to Claim 14,

AAPA discloses a driving coil (40) for exciting a magnetic substance core with current (Page 1, Paragraph [0003], Lines 2-3), first (30) and second (31) current amplifiers for applying current to first and second ends of the driving coil ((Figure 1) and (Page 1, Paragraph [0003], Lines 4-5), and a fluxgate (Figure 1) with a pulse generator (10) for generating a pulse to turn on/off the first and second current amplifiers (Page 2, Paragraph [0004], Lines 1-2).

AAPA does not disclose an A/D converter for converting an analog signal from the fluxgate into a digital signal, and a pulse controller for outputting a control signal for controlling the pulse generator, the control method including a) driving the pulse generator when the fluxgate initiates a drive and outputting a first control signal in order for the pulse generated from the pulse generator to be applied to the first and second current amplifiers, and b) outputting a second control signal in order for the pulse generated from the pulse generator not to be applied to the first and second current amplifiers when the conversion of the analog signal into the digital signal by the A/D is complete and the A/D converter outputs the digital signal to the pulse controller.

Renger discloses an A/D converter (48) for converting an analog signal from the fluxgate into a digital signal (Figure 1), and a pulse controller (32) for outputting a control signal for controlling the pulse generator (38), the control method including a) driving the pulse generator (38) when the fluxgate initiates a drive and outputting a first control signal in order for the pulse generated from the pulse generator to be applied to a coil ((Figures 1 and 4) and (Column 6, Lines 7-11)), and b) outputting a second control signal in order for the pulse generated from the pulse generator not to be applied to the coil when the conversion of the analog signal into the digital signal by the A/D is complete and the A/D converter outputs the digital signal to the pulse controller ((Figures 1 and 4) and (Column 7, Lines 12-30)).

It would have been obvious at the time of the invention to modify AAPA to include an A/D converter for converting an analog signal from the fluxgate into a digital signal, and a pulse controller for outputting a control signal for controlling the pulse generator, the control method including a) driving the pulse generator when the fluxgate initiates a drive and outputting a first control signal in order for the pulse generated from the pulse generator to be applied to the first and second current amplifiers, and b) outputting a second control signal in order for the pulse generated from the pulse generator not to be applied to the first and second current amplifiers when the conversion of the analog signal into the digital signal by the A/D is complete and the A/D converter outputs the digital signal to the pulse controller as taught by Renger in order to measure an external magnetic field (Column 1, Line 62-63).

Allowable Subject Matter

7. Claims 10-12 and 15-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to Claims 10-12,

The prior art does not disclose or render obvious an AND gate for logical AND-ing the pulse from the pulse generator with the control signal from the pulse controller to send an output signal to the first and second current amplifiers and combination as claimed.

As to Claims 15-16,

The prior art does not disclose or render obvious logical AND-ing in an AND gate in the sensing apparatus the pulse from the pulse generator with the control signal from the pulse controller to send an output signal to the first and second current amplifiers and combination as claimed.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

9. Applicant's arguments with respect to claims 9-16 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Schindler whose telephone number is (571) 272-2112. The examiner can normally be reached on M-F (8:00 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Schindler

JAY PATIDAR
PRIMARY EXAMINER